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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/826,497	04/16/2004	Yoo-Sok Saw	2060-3115	1342

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EXAMINER	
LAI, DANIEL	

ART UNIT	PAPER NUMBER
2617	

MAIL DATE	DELIVERY MODE
10/23/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/826,497	SAW, YOO-SOK	
	Examiner	Art Unit	
	Daniel Lai	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 September 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 September 2007 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-9 and 21-26 are rejected under 35 U.S.C. 102(b) as being anticipated by Deutsch (US 5,712,848).

Regarding claims 1 and 21, Deutsch discloses an apparatus and method for synchronizing uplink and downlink transmissions in a terminal of a mobile communication system (Abstract). Deutsch discloses a receiving unit receiving and converting an RF signal (col. 3, lines 63-65). Deutsch discloses a processing unit recognizing a construction of uplink time slots and downlink time slots from the converted RF signal (col. 3, line 65-col. 4, line 7, where Deutsch discusses burst mode device recovering clock signals for synchronization of data transmission between a

remote unit and a base unit). Deutsch discloses a detecting unit detecting a current switching point from the converted RF signal and determining a new switching point based on the detected current switching point and the recognized construction of uplink time slots and downlink time slots (col. 4, lines 8-28, where Deutsch discusses pulse trains for determining appropriate transmission time; col. 6, lines 1-23, where Deutsch discusses delay). Deutsch discloses a transmitting unit transmitting a data signal (col. 3, lines 64-65). Deutsch discloses a switching unit switching between the receiving unit and the transmitting unit according to the new switching point (col. 4, lines 33-49, where Deutsch discusses Mode control unit, which controls synchronization for the remote unit). Deutsch discusses wherein the transmitting unit transmits the data signal with a variable delay based on the new switching point (col. 6, line 48-col. 7, line 28, where Deutsch discusses maximum delay).

Regarding claims 3 and 22, Deutsch further discloses the burst mode device set forth the timing for transmission (col. 4, lines 4-7).

Regarding claims 4 and 23, Deutsch further discloses the transmitting unit selects a data signal to be delayed and adjusts a delay time of the signal (col. 6, line 48-col. 7, line 28).

Regarding claims 5 and 25, Deutsch further discloses the switching unit performs switching at a variable time interval according to the switching point (col. 6, line 48-col. 7, line 28).

Regarding claim 6, Deutsch further discloses the detecting unit controls the switching unit to switch between the receiving unit and the transmitting unit (col. 4, lines 4-45).

Regarding claims 7 and 26, Deutsch further discloses the detecting units determine the new switching point based on an actual signal processing time of the transmitting unit (col. 6, lines 1-23).

Regarding claims 8 and 9, Deutsch discloses a detecting unit (col. 4, lines 8-28). The detecting unit is inherently hardware based or software based.

Regarding claim 24, Deutsch further discloses performing demodulation for a received signal (col. 3, lines 63-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 10-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deutsch in view of Murata (US 5,742,589).

Regarding claim 11, Deutsch discloses an apparatus for synchronizing uplink and downlink transmissions in a terminal of a mobile communication system (Abstract). Deutsch discloses a receiver converting a received RF downlink signal to a digital signal (col. 5, line 56-col. 6, line 12). Deutsch discloses a modem examining the digital signal to recognize a construction of uplink time slots and downlink time slots and generating time slot construction information (col. 3, line 65-col. 4, line 7, where Deutsch discusses burst mode device recovering clock signals for synchronization of data transmission between a remote unit and a base unit). Deutsch discloses a time slot detector examining the digital signal to detect a first switching point between uplink time slots and downlink time slots and to determine a second switching point based on the detected first switching point and time slot construction information (col. 4, lines 8-28, where Deutsch discusses pulse trains for determining appropriate transmission time; col. 6, lines 1-23, where Deutsch discusses delay). Deutsch discloses an RF transmitter transmitting an uplink data signal (col. 3, lines 64-65). Deutsch discloses a switch switching between the receiver and transmitter according to the second switching point (col. 4, lines 33-49, where Deutsch discusses Mode control unit, which controls synchronization for the remote unit). Deutsch discloses wherein the transmitter transmits the data signal with a variable delay based on the new switching point (col. 6, line 48-col. 7, line 28, where Deutsch discusses maximum delay). Deutsch discloses an apparatus for synchronization between uplink and downlink, but does not explicitly disclose that the switch is to be TDD. In an analogous art, Murata discloses a TDD system (Abstract). Murata further discloses a TDD switch to perform switching between transmitting and receiving mode according to the synchronized time slots (col. 2, lines 19-23; col. 4, lines 40-62). It would have been obvious to one having ordinary skill in the art at the time

of the invention to modify the apparatus for synchronization between uplink and downlink time slots as disclosed by Deutsch with a TDD switch as disclosed by Murata so that a more flexible bandwidth allocation scheme can be performed as the amount of traffic of uplink and downlink may vary.

Regarding claims 12-15, Deutsch further discloses variable delay for transmitted signal at the switching point for uplink transmission (col. 6, line 48-col. 7, line 28).

Regarding claim 16, Deutsch further discloses the detecting unit controls the switching unit to switch between the receiving unit and the transmitting unit (col. 4, lines 4-45).

Regarding claim 17, Deutsch further discloses the detecting units determine the new switching point based on an actual signal processing time of the transmitting unit (col. 6, lines 1-23).

Regarding claims 18 and 19, Deutsch discloses a detecting unit (col. 4, lines 8-28). The detecting unit is inherently hardware based or software based.

Regarding claims 10 and 20, Deutsch disclose the limitations of claim 1 and Deutsch in view of Murata disclose the limitations of claim 11 as applied above. Deutsch does not explicitly disclose a TDD system. In an analogous art, Murata discloses a TDD system (Abstract). It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the apparatus for synchronization between uplink and downlink time slots as disclosed by Deutsch with a TDD switch as disclosed by Murata so that a more flexible bandwidth allocation scheme can be performed as the amount of traffic of uplink and downlink may vary.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Deutsch in view of Riley (US 6,072,783).

Deutsch discloses the limitations of claim 21 as applied above. The reference lacks counting the number of uplink and downlink time slots in the overall time slots of an uplink/downlink channel. Riley teaches method to control systems using data link modules comprises counting the number of time slots in each frame of the master clock (col. 6, line 6-7) to provide provision of a data link (col. 6, line 1-2). It would have been obvious to one having ordinary skill in the art at the time of the invention to combine the synchronization apparatus as disclosed by the admitted prior art and the method to count the number of time slot taught by Riley so that data link provision can be provided to the synchronization apparatus.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Lai whose telephone number is (571) 270-1208. The examiner can normally be reached on Monday – Thursday, 9:00 a.m. – 4:00 p.m., EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nick Corsaro can be reached on (571) 272-7876. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DL D.L.

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